

BIOMES

The biosphere is the thin layer of air, land, and water on or near Earth's surface where living things exist. A **BIOME** is the largest division of the biosphere, which includes large regions that have similar biotic (living) components, such as similar plants and animals, and similar abiotic (non-living) components, such as similar temperature and amount of rainfall.

Earth has **eight terrestrial (land-based) biomes**:

- tundra (arctic – few plants and trees)
- boreal forest (very cold – coniferous forest)
- temperate deciduous forest (4 seasons)
- temperate rainforest (coastlines, cool and wet – evergreens)
- grassland (temperate and tropical – grasses)
- tropical rainforest (warm – dense canopy of tall trees)
- desert (hot days, cool nights, minimal rainfall)
- permanent ice (polar ice, extreme cold – few plants and animals)

Identical biomes are found in different parts of the world. These biomes all have similar plants and animals (biotic factors) because they have similar temperatures and precipitation patterns (abiotic factors). **Temperature and precipitation are the main abiotic factors that influence the characteristics and distribution of biomes. The following factors influence temperature and precipitation:**

- latitude (distance measured in degrees north or south from the equator)
- elevation (height above sea level)
- wind
- ocean currents

CLIMATE is the average pattern of weather conditions (temperature and rainfall) that occur in a region over a period of years. A **CLIMATOGRAPH** is a graph of climate data for a specific region, showing **average monthly temperature and total monthly precipitation**.

ADAPTATIONS are special characteristics that enable organisms to better survive and reproduce. Certain types of plants and animals are characteristic of certain biomes because they are better adapted for survival in the environmental conditions in those locations. **There are three types of adaptations:**

- **structural adaptations** – physical parts or features of an organism that enable it to survive and reproduce, eg. porcupines have quills to defend against attacks, protective spines of cacti
- **physiological adaptations** – a chemical or physical event that takes place in the body of an organism to support its ability to survive and reproduce, eg. wolves maintain a constant body temperature regardless of weather
- **behavioural adaptations** – things that an organism does (ways that it behaves) that enable it to survive and reproduce, eg. how an organism feeds, mates, cares for its young, migrates, hibernates, or burrows to escape predators.